IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re patent application of
Leo MANS et al.
Serial No. 09/554,733
Filed: May 19, 2000

Group Art Unit: 1764
Examiner: A. Wachtel

FOR: SPONGE CLOTH BASED ON CELLULOSE AND PRODUCTION THEREOF

DECLARATION
under 37 C.F.R. 1.132

The Honorable
Commissioner for Patents and Trademarks
Alexandria, VA 22313-1450

Sir:

I, Leo Mans, declare and state as follows:

That I am a resident of An der Hasenquelle 15, D-55120 Mainz, Federal Republic of Germany;

That I am a Dr. rer. nat. (Ph.D.) having received my doctorate in chemistry from the University of Mainz, Federal Republic of Germany;

That I have been working in the research and development of sponge cloths since January 1, 1989;

That I am one of the inventors of the subject matter of the present patent application;

That I have read the final Official Action mailed November 18, 2005 and I believe I understand the Examiner's position.

In the Office Action, the PTO asserted that Applicant has not demonstrated unexpected results associated with the claimed sponge density.

In order to demonstrate the impact of the sponge density on the water absorption, the following experiments were carried out under my direct supervision:

Experiment 1:

A fiber-reinforced sponge based on cellulose was produced by the viscose process. In the production, a blowing agent was employed. Even though the present invention employs the NMMO process, the viscose method was used in the present comparison to highlight the role of using an internal reinforcement without the use of a blowing agent. As can be seen from the accompanying pictures, the sponge contains a wide pore size distribution including large pores having a diameter of well above 1.000 µm. The air-dried sponge had a density of 60 kg/m³. The sponge was then cut into sheets having a thickness of 1.5 mm. 15 mm-wide strips in both directions (machine direction and cross direction) were cut from this sheet and mounted in the test device as shown in the accompanying photographs..

It was then determined how fast the spongy material would absorb water. For this purpose, the strip was arranged in a perpendicular position and its lower end was immersed in a water bath with an immersion depth of 15 mm. The capillary rise of the water in relation to the period of time passed was then measured. The test was carried out on both strips and the mean value for the two samples was calculated.

Experiment 2:

Experiment 1 was repeated with a fiber-reinforced sponge cloth produced by the viscose process and there was no blowing agent employed in the production. The sponge cloth had a density of 130 kg/m³ and a thickness of 1.4 mm.

The water absorption was determined in the same way as in Experiment 1.

As can be seen from the accompanying diagram and the photographs (see the blue strip on the right-hand side on the photographs), the fiber reinforced sponge cloth made without using a blowing agent absorbed the water much faster. Such, after 30

seconds, the capillary rise was determined to be only 21 mm in case of the sponge of Experiment 1, whereas it was 53 mm in case of the sponge cloth of this Example. It was unexpected that a sponge cloth having such a high density absorbed water so much faster than a conventional sponge.

From my professional expertise, it is my belief that a fiber-reinforced sponge cloth obtained by the NMMO process (as opposed to the viscose process as in present Experiment 2) - and having the same density - would display water absorption characteristics that are at least as beneficial as the sponge cloth employed in this Experiment 2. As mentioned *supra* the viscose process was used so that a true comparison could be shown as to the value of omitting the blowing agent and using an internal reinforcement.

The sponge cloth as claimed in the present application is useful for household and cleaning purposes. A fast water absorption is thus highly desirable and is an important feature in any commercial product.

I further declare that all statements made in this declaration of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that wilful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such wilful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: February 17, 2006

Leo Mans

Leo Mans, Ph.D.